

laboratory at Bonn. The most successful method is as follows: Very thin radial and tangential sections of the cortical tissue of various trees or shrubs were treated on the slide, first with dilute and then with concentrated sulphuric acid. After carefully removing the acid with a pipette, the sections were washed thoroughly with distilled water and covered with glycerine. By this treatment the cell-wall (and often the middle lamella) is destroyed, and the protoplasmic thread between adjacent cells distinctly seen. The material for this work is best gathered in January. Sections may be cut from fresh specimens or from those which have lain some days in absolute alcohol. In the first case, however, the razor must be flowing with absolute alcohol.

THE RECENT EXPERIMENTS of R. Hartig to determine the tissue through which water moves in the plant, and the causes of the movement, lead him to the following conclusions: There are two types of trees, in one of which (e. g. oak) the duramen is incapable of conducting water, and the other (e. g. birch) in which the whole of the wood is conductive. Tracheides, and at times true vessels, are the chief organs for the transference of sap. The absorption of water by the roots is due to the osmotic forces in its cells, especially those of the root-hairs. The cause of the ascent of water in wood is the difference in density of the air in the conducting organs, and the pressure of the atmosphere exercises little or no influence on it.

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